EFJohnson®

WIRELESS COMMUNICATION
PRODUCTS & SYSTEMS

Corporate Headquarters

MARK S. ALLEN
Vice President, Engineering

Telephone: (507) 835-6200
Direct: (507) 835-6675
Direct Fax: (507) 835-6666
Internet: mallen@efjohnson.com

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December 3, 1996

William F. Caton, Secretary
Federal Communications Commission
Room 222
1919 M. Street N.W.
Washington, D.C. 20554

Dear Mr. Secretary:

Enclosed are our reply comments on the FCC Notice of Proposed Rule Making WT Docket No. 96-86.

Sincerely,

Mark S. Allen
Vice President, Engineering

Enclosure

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Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of	)	
	)	
The Development of Operational,	)	WT Docket No. 96-86
Technical, and Spectrum Requirements	)	
for Meeting Federal, State and Local	)	
Public Safety Agency Communication	)	
Requirements Through the Year 2010	)	

REPLY COMMENTS OF E.F. JOHNSON COMPANY

E.F. Johnson Company (E.F. Johnson or the Company) hereby submits its Reply Comments in response to the Notice of Proposed Rule Making (Notice) adopted in the above referenced proceeding.

I. INTRODUCTION

E.F. Johnson is a Minnesota based manufacturer of mobile radio equipment and has been in operation for over 65 years. The Company has been a leading provider of conventional and trunked radios and systems to businesses, SMR operators and subscribers, and public service operations both small and large. By various measures, E.F. Johnson has earned the number three land mobile radio market share position in the United States. As such, the Company has a significant interest in this proceeding and a substantial understanding of marketplace requirements and offers the following observations and recommendations regarding this Notice.

II. PUBLIC SAFETY WIRELESS ADVISORY COUNCIL (PSWAC)

PSWAC was an extensive effort of public safety users and manufacturers to develop a comprehensive assessment of public safety communications and spectrum requirements. E.F. Johnson participated in the subcommittee efforts involved and in the review process. The Company feels that the process fairly resulted in accurate identification of today's problems and concerns and projected public safety user's needs in the future within reasonable parameters. The Company fully supports the process.

The PSWAC Final Report (Report) delineates several key concerns and resultant recommendations that must be implemented to avoid a major predicament in the public safety area. These, and the Company's comments, are:

1. The lack of interoperability between public safety agencies, whether due to technology or spectrum assignments. Some level of interoperability is essential to ensure inter-agency communications during times of disaster and other, less dramatic, situations. However, the level of technology recommended for interoperability by Ericsson, 25 kHz analog FM, is regressive. The Company recommends that any interoperability on new allocations be performed on 12.5 kHz channels or narrower, consistent with the Commission's Refarming initiative. Further, Ericsson's Comments show high reliance on "Gateways" and "Shared/Consolidated Systems" to resolve the interoperability issue.

Gateways are inefficient between systems utilizing different voice coding techniques, as clearly explained by Ericsson in their "*Seventh*" on page 18 of their comments. Use of the Project 25 Standards would solve the problem, making digital gateways practical.

The Company supports Gateways for analog systems and for like coded digital systems and has found them an ideal solution for in-band and cross-band interoperability in the E.F. Johnson Multi-Net® radio networks in service today.

Shared/consolidated radio systems advanced by Ericsson as solutions to the interoperability problem are really only a method of intra-operation and do nothing to resolve the inter-operation issue as is essential for ubiquitous communications service. In addition, contrary to Ericsson's assertions, (1) there is no significant difference in the "host of technically advanced features and functions" available on a shared/consolidated system and a small, standardized, Project 25 system, (2) the benefits of the economy of scale can be far greater with the nation- (or world-) wide applications of Project 25 equipment and systems, and (3) at no difference in spectrum efficiency improvements.

E.F. Johnson supports shared/consolidated systems as effective solutions to local needs, but only on a voluntary basis. Independent governmental agencies should not be coerced or forced into sharing a system; Project 25 provides standards for equipment that can provide interoperability on a voluntary basis without the expense and other problems associated with shared systems.

2. The lack of adequate radio spectrum for public safety users to be able to perform their increasingly demanding and hazardous duties safely and effectively, today or in the future. Additional spectrum is a must. The Company agrees with Ericsson, APCO and others that immediate allocation of 2.5 MHz for a new, dedicated, Interoperability Band located somewhere below 500 MHz is essential.

We also concur with the APCO comment that the baseline technology for this interoperation should be 12.5 kHz analog FM, evolving to digital Project 25 standards; however, we recommend that such evolution be voluntary, not mandated.

3. Spectrum Efficiency. Ericsson has recommended that the spectrum efficiency standard be set at four equivalent voice paths per existing 25 kHz channel (pp27-28 of their Comments). The Company is concerned that this standard can be misinterpreted and recommends that the Commission implement the same two step migration plan as defined in the Refarming initiative and standardized in the Project

25 process. Setting the standard at 4 in 25 as Ericsson recommends would bypass Phase I of Project 25 and could place Ericsson in an unfair position while dealing a substantial financial blow to all of the manufacturers, including E.F. Johnson, that are developing Phase I 2 in 25 spectrally efficient digital equipment for Project 25 Standards. These manufacturers are expected to proceed with the development of Phase II 4 in 25 equipment when that standard is completed.

Continuing, Ericsson , on page 33 "...recommends that the Commission adopt a rule that proscribes a public safety agency from *a priori* preventing a potential provider of public safety systems from proposing a more spectrally efficient technology in response to a procurement activity." And suggests violators of such a rule be required to notify the Commission giving reasons for doing so. The Company suggests that such a rule would be self-serving to Ericsson in the short term and add another layer of regulation and red tape to an already effective process.

Public Safety entities already have the right (and fiscal duty) to evaluate various technologies and choose the system alternative appropriate to their circumstances. The only conceivable reason to adopt such a rule is to make it more difficult for users to accomplish objective selections.

III. APCO/NASTD/FED PROJECT 25 STANDARD (PROJECT 25)

Ericsson indicates in their Comments that the Project 25 process has been flawed due to the influence of the dominant supplier on the process and the resulting standards. E.F. Johnson strongly supports the Project 25 Steering Committee's Comments on the subject and refutes such a claim, offering the following:

1. Background: In 1989 a coalition of public safety users initiated a cooperative project to develop a digital trunking standard for public safety systems. The effort was guided by a steering committee consisting of equal representation from each of the local, state and federal public safety user communities. Users provided the functional requirements and manufacturers the technical responses needed for a standard technology development directed to the following key requirements:
    - Provide needed features and functionality
    - Improve spectrum efficiency
    - Facilitate competition among manufacturers and vendors
    - Assure interoperability among users
    - Provide compatibility between systems
    - Facilitate migration from today's systems to the most spectrum efficient systems of tomorrow

Participants (users and manufacturers) in Project 25 have invested tens of thousands of person-hours developing the requirements and technology standards designed to be responsive to the key (and many other) requirements users identified for Project 25. Public Safety users provided the requirements and manufacturers provided the solutions in a joint effort. Project 25 continues to develop user requirements and technology for "Phase II" which will result in a further improvement of spectrum efficiency to 4 to 1 over current 25 kHz analog systems, consistent with the Commission's Refarming initiative. E.F. Johnson has supported fully the Project 25 effort from its inception and continues to do so. The Company offers the following observations regarding Project 25 Standards:

2. Project 25 Standards Have Been User Driven From The Beginning. None of the participating manufacturers had all of their unique technologies selected for the standard. All technology proposals recommended by sub-committees were evaluated by the Project 25 Steering Committee using objective criteria focused on answering user's needs. For example:

- π /4 QPSKC modulation was selected after being demonstrated as fulfilling the requirements to provide maximum data rate within both 12.5 and 6.25 kHz channel bandwidths.
- The Improved Multi-Band Excited (IMBE) Vocoder was selected only after a comprehensive evaluation utilizing Mean Opinion Score comparisons among competitive Vocoders including CELP and Motorola's VSELP.
- The entire digital signaling format, frame, and word definitions were developed "from scratch" with inputs from all participants to meet the overall requirements defined by users.
- Frequency Division Multiple Access (FDMA) technology was selected by the Steering Committee as the most flexible system approach to satisfy user requirements, including talkaround and easy migration. Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) did not meet user's needs.

3. The Project 25 Standards Process is an open process. No company or user has ever been denied participation in the deliberations. E.F. Johnson employees have attended Project 25 meetings from the beginning and have observed a fully open, fair, considered and inclusive process in full compliance with Telecommunications Industry Association guidelines..

4. Project 25 Standards Will Promote Competition. All levels of equipment suppliers have participated in the development of the Project 25 Standards. The manufacturers have each (including Ericsson) contributed technical information, potential solutions, and essential peer review. Important compatibility issues have been resolved among manufacturers of radios and infrastructure and additional compatibility specifications are being developed in conjunction with peripheral suppliers such as console manufacturers.

5. Project 25 Standards Are Supported By Multiple Manufacturers. Since the beginning of the Project 25 effort, several unexpected radio manufacturers have surfaced as active participants who are developing compatible radios; these include BK Radio, Stanilite Pacific Ltd., Transcrypt International, Garmin, and Midland; (existing manufacturers included E.F. Johnson and Motorola). We understand that all of these manufacturers have signed Intellectual Property Right (IPR) agreements as needed to secure access to proprietary information. A Memorandum of Understanding that assures fair, reasonable and non-discriminatory access to IPRs for Project 25 has also been executed among all of the manufacturers involved in the process, including E.F. Johnson, Ericsson, Maxon, Motorola, Standard and others. Competition is being enhanced and the barriers to entry have been lowered by the development of technology standardization

Finally, on the subject of the Project 25 Standardization Process, E.F. Johnson agrees with the Comments of the Telecommunications Industry Association as filed in the instant proceeding. There is already in place at TIA an accredited fair and open procedure to address standards needs of the Public Safety community; no need exists for the establishment of another such body.

IV. SUMMARY

E.F. Johnson agrees with the majority of the Comments reviewed, except as noted above, and strongly recommends that the Commission pursue all possible actions to accomplish the above and other key recommendations in the PSWAC Report including the immediate allocation of additional spectrum for public safety users.

Respectfully submitted,
E. F. Johnson Company

By:

Mark S. Allen
Vice President, Engineering